

An Electronic Archive and Journal/s for Research in Design

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Executive Summary

There is a strong case for electronic journals for research in Design

From a review of practice and thinking in other fields, it appears that there are suitable exemplars, tools and methods available which makes such journals viable.

We propose a two-part approach consisting of a single archive of "publications" providing an environment for several refereed research journals and other related ventures which could benefit research, teaching and professional practice.

We propose an approach to progressive refereeing, based on recent thinking and developing practice in electronic research publishing, which takes advantage of the online environment to support work in development and provide a forum for scholarly discourse.

We propose an outline of the quality requirements and structures needed to ensure quality of publication.

Sheffield Hallam University is setting up and trialling the networked software and database needed to develop these proposals, during the next year we would like to form a partnership with several institutions to bring the project to reality.

Background

This proposal arises from a number of circumstances:

1. There is a growing body of research in which the processes and outcomes of design practice form a significant part of the investigation or the material investigated. In many cases it has been problematic for researchers to provide a full permanent record of their work because of the limitations of traditional printed media. This is not a unique problem for Design but it is more central and pressing for us than for most other disciplines.
2. Research in Design is served by a limited number of journals and the relatively small academic audience makes it unattractive for publishers. At present there are three established international broad-based research journals in the English language: *Design Studies*, *The Design Journal* and *Design Issues* and all follow the general format for a conventional research journal with written papers and monochrome images. An attempt to publish a "designerly" research journal (*co-design*) in the mid 1990's failed, arguably because of the clash between

production values and production costs, but even that did not attempt to address the problem of providing rich visual material. There have been a number of recent initiatives to introduce digital journals but, unlike paper journals, they do not fit into an established infrastructure.

3. The development of electronic publishing on the World Wide Web has created a number of useful resources, a body of developing theories and practices for electronic journals, and some novel principles for the organisation of peer-reviewed research journals and associated archives. We believe that there are sufficient ideas, resources and experience available to allow us to construct an infrastructure and start to develop an archive together with journals which both grow from and depend on it.

Why an Archive *AND* Journals

So far, journals have been the basis for the research archive. If past copies of a journal are maintained by libraries then the work is preserved for future scholars. Recently some journal publishers have created digital archives which should be more accessible than paper but, since most publishers have allowed only their existing subscribers to use it, the benefits have not been felt by the wider community.

Expensive journal subscriptions are an increasing burden for libraries, especially in poor countries. Researchers want the widest possible audience to see their work so there has been a growth of research archives independent of journals. The pioneer, since 1991, is the Los Alamos Physics Archive (<http://xxx.lanl.gov>) where authors can place research papers in an archive that is open to anybody who has internet access. The generic description of such an archive is "pre-print" indicating that the author has placed the work in the archive before submitting it to a refereed journal.

This has caused a crisis for physics journals who are now being asked to consider publication of papers which are already in the public domain, but the success of the Los Alamos project has been such that many journals have accepted the situation and we now have a two-track system where the journal validates the research output but is no longer the usual, or most up to date, means of access to current research papers.

Recently, this movement has been underpinned by the Budapest Open Access Initiative (BOAI 2002), sponsored by George Soros, which is developing data standards to ensure that such archives will all form part of a universal network of scholarly literature. A copy of the BOAI is included with this information pack.

The next step has been the development of online journals that are freely available on the web. At the moment these are seen as being less significant than paper journals but there is enough development going on to indicate that rigorous e-journals should gain status and could supplant paper and there is evidence that online papers attract a greater number of citations than those on paper alone. The significant issue is that they remove all the costs that publishers traditionally met, there are still the editing/refereeing costs but those were always met by academics and their employers anyway so they are no worse off than before.

One of the significant costs and problems of an e-journal is maintaining the computer infrastructure and ensuring the continuing integrity of the archive. Since these costs

and problems are being met by archive projects there is an increasing interest in the idea that journals should not get involved in the technical problems but rely on the archives to look after the material, with virtual journals concentrating on refereeing. One proposal (Edmonds 2000) implies that the title "Journal" may become redundant, describing a new organisation, a "Review Board" which will provide the refereeing function for a specialist area of research, and suggesting that an archive may be used/served by many review boards.

This structure would be ideal for a developing area such as ours since, if we can set up a sufficiently flexible and well-structured archive, we can then start to promote the development of journals in several areas of Design and the technical entry barrier to a new virtual journal will be minimal. There are, of course, quality dangers here but those are dealt with below. Another benefit is that the same infrastructure might be used for a number of other initiatives, for example allowing archiving and "publication" of work by students and practitioners and how this could be of benefit will be seen in the discussion of refereeing/review processes below.

Refereeing and Editing Process

(NB, Frequently in this discussion we have referred to "papers" and "authors". This just reflects the examples and discussions that we have looked at, mainly in the sciences and humanities. Our project would be concerned with diverse forms of output but the underlying principles are the same)

The practice of pre-publishing unrefereed papers/work in progress in archives has led to the idea that publishing could be a more progressive and transparent process than in the old journal system. Andrew Odlyzko (1994) proposed that papers might be posted on the web, subjected to informal peer review and revision, leading to a formal review by recognised referees. One interesting aspect of his proposal was that you could improve and update your paper but you had to leave the earlier versions in place as well as the new one. This system does make it impossible to carry out blind refereeing but one should question how "blind" refereeing is, especially in a small field where people know each other. Certainly, as referees, we find that we can usually tell who has written a paper or at the very least where they are and where they fit in the picture of design research. The Biomed Central Project (www.biomedcentral.com) is the largest open access publishing project to date and many of its medical journals use Odlyzko's approach to open refereeing with the full process open to inspection by anybody who cares to look.

Bruce Edmonds (2000) has taken this further by proposing that the refereeing process should not be, as at present, a gatekeeping task (is this paper in or out?) but instead the referees' ratings (against a range of criteria as used in most refereeing processes) and comments for each paper should be published in the archive with the paper, allowing readers to see the strengths and weaknesses of each paper and choose their own criteria for what they wish to read. For example if there are no highly rated papers on a topic, you may wish to see anything at all published on it since there is always something to be learned, especially if you are able to see what experts have thought about it. A copy of Bruce Edmonds' paper is included with this information pack.

We have discussed this with two of our newer researchers who are very attracted to the idea that they could publish their work experimentally, and hope to get some

feedback, rather than struggle with the problem of submitting work for formal refereeing and be unsure why or how far they had fallen short of the criteria. We would certainly want to see this opportunity used by postgraduate students who need to take their first steps into the public domain, whether for research or creative work.

One might be concerned about whether people would want to give up time to provide informal feedback. We suggest that there are three things that need to be done to ensure that other researchers and designers want to get involved:

1. Firstly one has to establish guidance for "authors" on quality thresholds, and perhaps require some local review within the author's own institution, before a publication is posted. However these should be seen as opportunities to reflect on whether the publication is ready to post rather than gatekeeping. In the end the author should be responsible for their own publication and feel properly aware of the dangers of exposing poor thinking or poor communication to their peers, although there would be some merit in the idea of requiring a sponsor - another researcher who is willing to affirm that they believe that this publication is ready for posting.
2. Secondly the notification and search system/s will be crucial. The audience should be able to specify their research and professional interests and the author must provide enough information (keywords and abstract) to allow the archive system to distribute notifications to the right people and to allow the audience members to decide whether to look at the full publication. However a good notification system should be a considerable bonus for researchers and professionals who want to be kept up to date. In design there is a big gap between the research and professional communities and this might be a excellent way to narrow that gap.
3. The feedback/discussion must have some impact and create involvement. One journal which demonstrates good practice is *Pediatrics* (<http://www.pediatrics.org>) which has a section called "*post-publication peer review*" (P³R). This offers an insight into how the first stages of the Odlyzko system might work - alongside the paper you can read all the comments by peers plus the author's responses in return. The papers and review comments are accessible to anybody but only registered subscribers can comment, which appears to restrict the comment to knowledgeable people although there is the occasional personal rant which is not particularly relevant or helpful to the author.

To summarise, we suggest that any project sets out to develop a progressive approach which encourages the public development of work in progress, rather than a traditional expert gatekeeper approach. Having looked at examples in action we are reasonably confident that the software available (*eprints*) is capable of supporting such a system and that it may be suitable for other purposes as well as research refereeing.

A secondary benefit which could flow from a progressive review approach is that it will encourage scholarly debate which focuses on actual research. There are many forums for debate on the web but they suffer from lack of discipline and lack of clarity about the purposes of a debate, so there is an inevitable drift and trivialisation leaving no issues resolved. With rules of engagement and some editorial control (to remind people of the need to focus on the publication in hand) a more constructive form of debate may emerge, more in the spirit of a learned society.

Quality Issues

Refereeing is at the heart of a research journal. In the past this has been in the hands of an editor, who will have a close relationship with the publisher. There is a great deal of potential for inertia here, since it makes life easier for the publisher to stick with the devil they know, so the editor has a great deal of power and patronage, inherited from the publisher who controls the limited means of dissemination.

We would not suggest that any of the established journals in design have suffered problems in this way, but it is arguable that a more open and quality-driven system might be possible once the disproportionate influence of the publisher has been removed.

One problem, however, is that, if there are no infrastructure barriers, anybody could start a journal and there would be rapid increase in vanity publishing leading to confusion and loss of faith in the quality of online journals.

The responsibility for avoiding this danger lies first with those who create the infrastructure and subsequently with the academic community that it serves, particularly those who undertake to publish journals within the system. When creating the infrastructure it is necessary to establish some rules for participation and to take a lead in setting up the first journals which must operate to the highest standards. Once there is a small community of journals they must take a lead in advising, and ensuring the quality of, any new journal which is introduced.

A practical example of this can be found in the Association of Peer-Reviewed Electronic Journals in Religion (<http://rosetta.atla-certr.org/apejr/apejr.html>) which sets criteria for membership based on the policies of the journals, the main ones being the standing and pertinence of the editorial board, quality of peer review process and a commitment to publishing for open access on the web.

APEJR has relatively few teeth since it is only a membership organisation, although it does provide the vital validation of publication quality. In our project, the existing journals will actually hold the keys to the infrastructure so they will have a greater control over quality of publication but a commensurate responsibility to maintain their own quality and operate fair and reasonable policies. One central issue is to ensure good standards without excluding research which is unconventional or challenging to the existing "editors' club".

So the quality challenge is to:

1. Create a technical infrastructure which facilitates good practice in editing and peer review.
2. Establish robust criteria for the organisation and operation of journals.
3. Set up and support the initial journals, ensuring that they operate to high standards and gain international standing.

4. Create an organisational framework for the journals to operate as a self regulating association, which both sets standards for new journals and ensures the continuing quality of all members.
5. As in all aspects of a project like this - to make policies and processes very clear and explicit to the audience, who have the power to accept or reject e-journals as being relevant and of good standing.

Ownership?

Our proposal is for the infrastructure and the first journals to be set up by a partnership between SHU and other universities with good research standing in Design. However the medium term aim must be for ownership of the journals to pass to the editors and their association, and the Universities to become providers of the technical infrastructure, with the journals (and others who create activities based on the archive) as clients. It would be unwise for a university to have a stake in a journal if the journal is to be seen as independent.

Who pays for the infrastructure is open to question. Initially we propose that SHU and any partners fund the development, but funding should be sought from AHRB or from JISC who have supported some similar projects.

We would not favour charging client journals as they have no direct income and provide their services as part of their scholarly activity, but it may be worthwhile to consider a subscription or filing charge to organisations who wish their staff to post publications to the archive. This approach has been proposed by Harnad (2001, 4.2.viii) who believes that it would be good value for institutions that will save increasingly on the cost of journal subscriptions as electronic archives develop and it is the commercial; basis for Biomed Central which appears to be paying its way and offering good value. There is also scope for a refereeing charge by journals to support their costs.

We need to consult with scholarly associations in Design, such as European Academy of Design, Design Research Society, and the Asian Design Societies.

Similarly, we would wish to consult with the editors of existing journals, and later on invite them to consider moving to electronic publication. However the wider debate on e-journals indicates that editors may be hostile and may argue strongly to preserve the status quo so we would not wish to expend too much energy revisiting arguments which have been rehearsed at length in other fields. The aim is to set up and develop electronic journals in response to a need which is not being met, not to find reasons to do nothing. The project may not achieve all its aims but, even without formal journals, an online archive is of great value, as demonstrated by the Los Alamos project.

Content, Style and Quality of Communication

In an archive concerned with Design there is a natural concern with quality of communication and a wish to maintain professional standards, especially as it should speak to professional as well as academic audiences. In addition we anticipate that material will be submitted in a wide range of formats, reflecting the great variety of contexts and media that the research will address.

When dealing with creative people employing diverse media, it would be inappropriate and counterproductive to enforce rigid styles, as used in conventional research journals. However the danger that people will submit work which is incoherent, badly organised or inappropriate in its presentation is ever present and there will be a need for guidance at several levels, ranging from discussion of the design and communication problems of this type of research through to specific exemplars to illustrate the discussion and help inexperienced authors.

Beyond that there is the more profound issue of how one creates a research narrative which makes appropriate and full use of non-text material and this will be an important concern in the early years of the archive. We have made a start in developing and disseminating ideas about this (eg Rust & Wilson 2001, Rust & Robertson 2003) and we see this project as a vehicle for promoting debate and experiment. In the early period of establishing the archive we should seek to foster and develop examples of practice which will inform the guidance provided to authors as well as the wider practices of research in Art and Design.

Technical Issues

The eprints software (<http://www.eprints.org/>) developed by Southampton University with funding from JISC appears to provide an appropriate environment for this project. It conforms to the Budapest standards for research publication archives and has been taken up by a number of centres. SHU has installed an eprints server for this project and at the moment we are setting up the basic configuration and interface to allow some trials to take place. Following the Barcelona workshop we will be inviting participation in the trials to develop the usability and usefulness of the archive.

We need to have a clear set of requirements for the system. on the next page there is a diagram giving some of the features that we might look for.

Some of the requirements for a research publication archive

- Easy for authors to post to and update
- Accepts multiple formats, eg:
 - Acrobat
 - Word
 - Powerpoint
 - Quicktime
 - HTML
 - Flash
 - Director
- Allows Registration
 - Authors/Reviewers (CV and confirmation of status)
 - Readers (specify Interests)
- Supports continuing review and exchanges between authors and reviewers
 - Public, for "pre-press"
 - Private, for Editors and Referees
 - Allows version updates
- Editorial Control
 - To limit inappropriate behaviour
- Notification to readers with abstracts, based on readers, interests
 - New archive entries (email)
 - New Refereed Papers (email) (on website)
- Refereeing process
 - Mechanisms to ease Editors' role
 - Attachment of ratings to papers?
 - Subsequent comment by readers?
- Citation Index (there is no comprehensive citation index for design research)
 - Approach which integrates archive-based journals with abstracts and bibliographies from papers published elsewhere
- Author CV's
 - Generates comprehensive listing and links to all publications and other contributions by each "author" as well as other information provided by them

In addition there are technical concerns about longevity of digital archives William Arms (1999) gives an overview of the main problems. Immediate problems are ensuring that the archive is mirrored on several sites and that there are strategies for regular migration of the data to avoid deterioration of the media. In the longer term it is important to have strategies for ensuring the continuance of the archive if the original sponsor (eg SHU) withdraws or ceases to exist. Unlike paper archives which will sit on library shelves until somebody decides to throw them away, digital material can just disappear from lack of attention.

A further problem is the need to ensure that archived material is not tampered with after posting since there will be temptations for authors and others to alter history. This is already a serious problem for web-based material and one of the main arguments for a managed archive rather than links to institutional or author's pages.

Conclusions

So, to sum up, we have an opportunity to create something new and useful for research in Design. To make progress in the forthcoming year we need to:

- Establish appropriate partnerships
- Establish "Editorial Boards" for the archive and journals, bringing in people of good standing from the wider subject communities.
- Develop formal policies for the archive and one or two pilot journals.
- Create the archive, place some trial material in it and test run/develop the full range of activities.
- Launch the project to the design community, and be pro-active in encouraging colleagues to start to post material and seek refereeing, probably with an experimental period when they can pull it back out if they have done something embarrassing.
- Recruit existing journal editors and conference organisers to use the archive as their publishing infrastructure

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